

## DRAFT EPA Questions and GBMSD Responses

### **Paragraph 22.e:**

#### EPA Question 1

*EPA is not sure how this relates to the GAC heat excursion. Was there a failure/problem with the CO monitor at the time of the event?*

#### GBMSD Response

The CO monitoring system was operating properly at the time of the event.

The system was working properly at the time of the November 2019 GAC start-up and subsequent thermal excursion. On the day prior to the event, corrective maintenance and successful calibration were performed on the CO monitoring system. During the event, the readings from the CO monitoring system were confirmed with a handheld CO monitor.

**Commented [SD1]:** This response doesn't really answer my question about why/how NW has improved their CO monitoring maintenance practices as a result of the GAC event.

#### EPA Question 2

*Why does GBMSD think the maintenance practices need to be improved?*

#### GBMSD Response

At the time of the GAC failure, the CO monitoring system was operating properly. The CO monitoring system is a combination of sensitive instruments that has required corrective maintenance on several occasions. As GBMSD gained more experience with this system, maintenance staff worked in close coordination with the instrument manufacturer to improve the reliability of this system. All maintenance work has been conducted in conformity with the manufacturer's recommendations and input.

**Commented [SD2]:** Kind of a non-answer.

#### EPA Question 3

*GBMSD should develop an action plan to be implemented in the event the GAC CO concentrations cross a critical threshold. What CO concentration and reason for selecting that concentration?*

#### GBMSD Response

The selected concentration setpoints are based on communications with and input from the system supplier, Suez, and the system manufacturer, CPPE. The following conditions initiate response actions:

- Differential CO concentration between the GAC inlet and outlet exceeds 60 ppm for five minutes
- CO concentration exceeds 200 ppm at the GAC inlet and/or outlet for five minutes

**Commented [SD3]:** What are the response actions?

### **Paragraph 22.f**

#### EPA Question 1

*What did GBMSD do to optimize the scrubber and WESP?*

#### GBMSD Response

The WESP and scrubber are performing as designed and GBMSD has enforceable parameters to ensure they continue to perform as designed. GBMSD verifies effectiveness during emissions testing and continuous monitoring. GBMSD has confirmed the WESP and scrubber are operating as designed to limit

PM and SO<sub>2</sub> loading to the GAC. GBMSD worked with the equipment manufacturers to evaluate and optimize parameters such as scrubber water flow rate, differential pressures, pH, and WESP performance.

**Commented [SD4]:** Again, a non-answer.

#### EPA Question 2

*Does GBMSD know if PM and SO<sub>2</sub> entering the GAC has decreased as a result of the optimization?*

#### GBMSD Response

GBMSD is unable to confirm the result of optimization related to the question of PM and SO<sub>2</sub> at the GAC inlet since GBMSD does not monitor PM or SO<sub>2</sub> at the GAC inlet. The WESP and scrubber are performing as designed and GBMSD has enforceable parameters to ensure they continue to perform as designed. The emission control system's effectiveness is verified through parametric monitoring during operation and with periodic compliance emissions testing.

**Commented [SD5]:** So, the answer is "no".

#### EPA Question 3

*Does GBMSD know if the sulfur salts found in the GAC are the result of SO<sub>2</sub> entering the GAC from upstream gases or a result of the sulfur-impregnated GAC media reacting with flue gas contaminants (such as HCl, water, VOC's, PM)?*

#### GBMSD Response

Based on the manufacturer's input, the source of the deposits on the GAC is from upstream gases.

**Commented [SD6]:** I'm sure the manufacturer will say the source of sulfur salts is not media in their equipment. Anyway, if this is correct, the sulfur is coming from the wet scrubber. Need more sorbent added to the scrubber water?

#### **Paragraph 22.g**

#### EPA Question 1

*Implementation of enhanced protection system interlocks [Note to GBMSD: New Water states in its 2/27/20 letter that this practice will eliminate gaps in the protective system controls, resulting in increased alarm and protective functionality, while avoiding nuisance quenching of carbon. What was specifically implemented? What is "nuisance quenching of carbon"?]*

#### GBMSD Response

The functionality of the protective systems (CO monitoring, bed temperature probes, etc.) were fully reviewed by GBMSD staff, Suez (incineration system vendor), and CPPE (GAC manufacturer). Recommendations were evaluated and several GAC system controls and responses were implemented such as temperature alarms at droplet separator, adsorber inlet and outlet, and within the carbon bed. Monitored CO concentrations at the inlet and outlet and differential across the GAC were used to establish automatic system responses.

**Commented [SD7]:** What are the system interlocks? Does the GAC shutdown at specific temps? I was hoping for a little more detail than this.

Nuisance quenching of carbon is more adequately described as the water quench system being activated when it is not desired or needed as a result of circumstances within the system operation or protective systems.

See the table below.

#### **Paragraph 22.h**

#### EPA Question 1

*Regarding operator training to increase awareness of GAC control functionality changes, hot spot identification, and response protocols: What are the response protocols? Can EPA have copies?*

#### GBMSD Response

Operators are trained on automatic response protocols based on the equipment manufacturer's recommendations as shown in the attached table. These responses are automated to minimize opportunities for operator error.

## GAC Parameter Interlocks and Responses

GAC Parameter	Trigger	Delay	Mode						
			Manual	Offline	Startup	Hot Standby	Online	Shutdown	Emergency Isolation
PIT-0700: high pressure across carbon bed	> 11" wc						X		
TDI-0651: low diff. temp: scrubber outlet/adsorber inlet	< 15° F	15 min					X		
TIT-0517: high scrubber outlet temperature	> 100° F						X		
TIT-0608: high temperature at demister inlet	> 165° F						X		
TIT-0666: high temperature at adsorber inlet	> 165° F						X		
PIT-607: low pressure at demister inlet	< 3" wc	120 sec					X		
TIT-0710: high temperature at adsorber outlet	> 165° F		X	X	X	X	X	X	
TIT-0708/0709: high temperature in the carbon bed adsorber	> 165° F		X	X	X	X	X	X	
AIT-0716C: high differential of CO concentration	> 60 ppm	5 min	X		X	X	X	X	
TIT-0710: high temperature at adsorber outlet	> 175° F		X	X	X	X	X	X	X
TIT-0708 or 0709: high temperature in the carbon bed adsorber	> 175° F		X	X	X	X	X	X	X
TIT-0708 or 0709 + AIT-0716A or B: high carbon bed temperature & high inlet/outlet CO	> 100 ppm	5 min							X
TIT-0708/0709: high temperature in the carbon bed adsorber	> 155° F	1 min		X					
AIT-0716C: high differential of CO concentration	> 60 ppm	5 min		X					
AIT-0716A or 0716B: High inlet or outlet CO	> 200 ppm	5 min		X					
			Triggers a GAC Shutdown*						
			Triggers GAC to go to Hot Standby*						
			Triggers GAC to go to Emergency Isolation*						
			Triggers the GAC to Quench*						
			Alarm popup appears on all screens						
			*Feed to the incinerator is stopped in addition to this response						

**Commented [SD8]:** Seems they would want to take some sort of preventative action before the exceed their upper value of their permitted dP.

Also, no action taken for dP below the minimum limit?